

Rabies Control Manual 2012



Division of Communicable and Environmental Diseases and Emergency Preparedness

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I. INTRODUCTION

The purpose of this manual is to provide current information on rabies control in Tennessee. It is intended for use by local health departments, animal control programs, veterinarians, and healthcare providers. Recommendations contained in this manual are based on the following publications:

- "Human Rabies Prevention—United States, 2008: Recommendations of the Advisory Committee on Immunization Practices" (http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5703a1.htm)
- "Use of a Reduced (4-Dose) Vaccine Schedule for Postexposure Prophylaxis to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices" (http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm)
- Compendium of Animal Rabies Prevention and Control, 2011 by the National Association of State Public Health Veterinarians (http://www.cdc.gov/mmwr/pdf/rr/rr6006.pdf)
- Tennessee Code Annotated: Title 68, Chapter 8 (http://www.lexisnexis.com/hottopics/tncode/)
- Rules of the Tennessee Department of Health (http://www.tn.gov/sos/rules/1200/1200-14/1200-14-01.20110731.pdf)
- Rules of the Tennessee State Board of Veterinary Medical Examiners (http://www.state.tn.us/sos/rules/1730/1730.htm)

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II. OVERVIEW

Rabies is a viral disease of mammals that is present in most countries of the world. All species of mammals, including humans, are susceptible to rabies virus infection, but only a few species are important as reservoirs for the virus. In the United States, distinct strains (variants) of rabies virus are maintained in populations of raccoons, skunks, foxes, and several species of bats.

Virus is present in the saliva and central nervous system (CNS) of a rabid animal. Transmission of rabies virus typically occurs only when an uninfected animal is exposed to the saliva of a rabid animal. This almost always involves a bite, although transmission has been very rarely documented via other routes such as contamination of mucous membranes (e.g. eyes, nose, mouth) with infectious material, aerosol transmission, and organ and tissue transplantation in humans.

The length of time between infection with rabies virus and onset of disease, or the incubation period, typically ranges from about 3 weeks to 3 months; however, incubation periods ranging from less than 10 days up to several years have been documented. During incubation, the virus travels from the exposure site to the CNS by means of the peripheral nerves. The virus replicates in the brain, causing encephalitis, and then travels to the salivary glands. At this point the animal is capable of transmitting the infection. It is important to note that the virus is not present in the salivary glands and cannot be transmitted until after it has reached the brain.

Although rabies traditionally has been reported to present clinically in either an encephalitic ("furious") or paralytic ("dumb") form, cases can exhibit clinical signs suggestive of both categories or can have an atypical presentation. Clinical signs vary depending on animal species, virus variant, and possibly the location and severity of the exposure. No definitive species-specific clinical signs of rabies are recognized.

Early signs of illness (the prodromal phase) are characteristic of a viral syndrome and often include lethargy, fever, and not eating. Within 1-2 days neurologic signs develop, typically including altered behavior, increased salivation, and difficulty swallowing. Jumpiness, tremors, unsteadiness, and weakness are also common during the neurologic phase. The disease progresses rapidly and is almost invariably fatal. Death usually occurs less than 1 week after illness onset; occasionally animals will die acutely from rabies with no recognized illness.

Rabies may be clinically indistinguishable from other causes of encephalitis. Viruses, bacteria, fungi, protozoa, poisons, and trauma can all cause CNS disease with similar presentations. Rabies can generally be ruled out if the animal's condition does not deteriorate rapidly or if it improves at any point. A course of illness longer than 7 days in a domestic animal is not consistent with rabies.

Rabies can be diagnosed in animals only by examination of brain tissue. No antemortem diagnostic test is reliable.

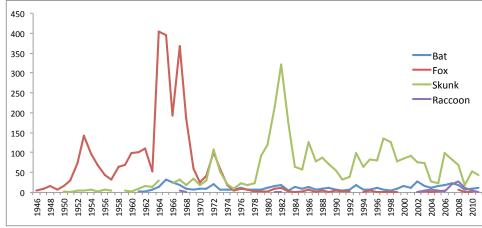
III. <u>EPIDEMIOLOGY</u>

Rabies in animals

Rabies in the United States is maintained in wild animal populations. Raccoons, skunks, and foxes are reservoir hosts in defined geographic areas. Bats are also reservoir hosts and maintain a number of bat-associated variants of the rabies virus. All 49 continental states have bat rabies; Hawaii is rabies-free.

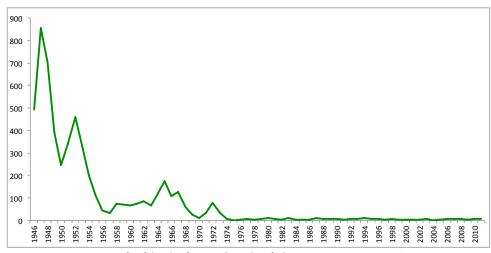
Since the early 1980s, the predominant rabies reservoir species in Tennessee has been the striped skunk. A large increase in skunk rabies cases was seen during 1980-1983. During 1984-2011, reports of rabies in wild animals averaged 90 per year in Tennessee, including an average of 72 skunks and 12 bats per year. Other wild animals occasionally found to be rabid were foxes and raccoons. The raccoon variant of rabies spread into the eastern Tennessee raccoon population in 2003, with 4 cases in raccoons reported that year.

Reported cases increased to 28 in 2008, then decreased to 1 in 2011. A large-scale oral vaccination program administered by the United States Department of Agriculture (USDA) has been largely responsible for preventing extensive spread of raccoon rabies west of the Appalachian Mountains.



Reported rabies in wild animals in Tennessee, 1946-2011

The canine rabies variant, which once circulated widely in domestic dogs, has been eliminated in the United States by pet vaccination and animal control activities. When canine variant rabies was prevalent, hundreds of cases of rabies occurred in dogs and other domestic animals each year in Tennessee.



Reported rabies in domestic animals in Tennessee, 1946-2011

began to be controlled in the 1950s, and, since the mid-1970s, only a few cases of rabies occur in domestic animals each year in Tennessee.

Reports of rabies in domestic animals averaged 6 per year in Tennessee during 1975-2011. Most of these were in dogs, with an average of 4 cases per year. Other domestic animals that are occasionally found to be rabid are cats, cattle, and horses. These are cases of "spillover" infection of wild animal

rabies variants, mostly skunk variant. Non-reservoir wildlife species can also be affected by spillover of rabies from reservoir species, but this is exceedingly rare in Tennessee. From 1975 to 2011, only 3 cases of rabies were reported in non-reservoir wild animals: a weasel, an opossum, and a bobcat.

Cats	Cattle	Dogs	Horses	Pigs
9	4	35	10	1

Domestic animals reported rabid in Tennessee, 2000-2011

In areas where raccoon variant rabies is present, spillover infection of domestic animals and non-reservoir wild animal species is much more common than it is in Tennessee. This is likely due to the aggressive nature of raccoons as well as their overlapping habitat with many other animals. In raccoon rabies-endemic areas (primarily the eastern seaboard states), rabies is much more common in domestic cats; it is also occasionally found in wild species as diverse as bobcats, groundhogs, and deer.

Rabies in humans

Human rabies is very rare in the United States as a result of domestic animal vaccination, animal control activities, and effective biologics for post-exposure prophylaxis (PEP). Nationwide only 2-4 cases of rabies in humans are reported each year. A number of these cases involve immigrants or travelers who were infected abroad, often with canine variant rabies. Domestically acquired cases are almost exclusively caused by bat variants. The most recent human rabies case in Tennessee occurred in 2002 and was due to a bat exposure.

Variant	Indigenous	Imported	AII
Bat	23*	2	25
Canine	0	9	9
Raccoon	1	0	1
Unknown	1	0	1
All	25	11	36

Human rabies cases in the United States, 2000-2011

IV. **EXPOSURE**

Types of exposure

Potential exposures to rabies are classified into 2 general categories: bite and non-bite. As stated previously, rabies is generally only transmitted by a bite from a rabid animal. However, certain non-bite situations may present a risk for rabies transmission. Organ and tissue transplantations from donors who died of unrecognized rabies infection have resulted in secondary cases of rabies in at least 16 transplant recipients worldwide, including 5 in the United States. Though this is an extremely rare situation, it creates a high risk of transmission. No other laboratory-confirmed cases of human-to-human spread of rabies have ever been documented. A few cases of aerosol transmission of rabies virus have

^{*4} cases were transplant-acquired

occurred in laboratories and possibly in a cave containing millions of bats. Rabies virus transmission via contamination of mucous membranes or an open wound with saliva or CNS tissue is possible but unlikely.

Risk assessment

Any potential exposure to rabies requires a prompt risk assessment. The first consideration is whether the exposure was bite or non-bite. Very few documented cases of rabies in humans have involved non-bite exposures, and these resulted from highly unusual situations. Rabies virus is only present in saliva and nervous tissue of a rabid animal. Touching a rabid animal or contact with blood, urine, or feces does not constitute an exposure. The virus is fragile and does not persist in the environment; it is rapidly inactivated by sunlight, common disinfectants, and detergents. In general, if material is dry then it contains no infectious rabies virus. However, the virus can remain infectious indefinitely in frozen material.

Other considerations when assessing an exposure include the type of animal involved and the situation leading to the bite. The risk of rabies transmission from normal, healthy domestic and non-reservoir wild animals is very low, whereas the risk from rabies reservoir species (wild carnivores and bats) is high. The risk associated with exposure to any animal showing signs of illness—especially neurologic illness—is increased. Finally, the risk from an unprovoked attack is greater than that from a provoked attack. If a human is attempting to handle a wild animal, any attack should be considered provoked. Refer to the risk assessment chart (Appendix C) and consult local or state public health officials when determining the level of rabies risk involved in an exposure (Appendix K).

Communication

Epidemiologists or clinical staff at the local or state health department should be consulted when decisions are being made about testing an animal for rabies or recommending PEP for an exposed person. Consultation is available with epidemiologists at the Tennessee Department of Health (TDH) office in Nashville 24 hours a day by calling 615-741-7247. If the animal is considered a high rabies risk, the state public health laboratory should be notified of its impending arrival and the urgency of the test results (see Section VI—Laboratory Testing). If the animal tests positive for rabies, the results are indeterminate, or the specimen is unsatisfactory for testing, the lab will notify appropriate points of contact in Epidemiology and General Environmental Health (GEH) at the TDH central office. Epidemiology and GEH will then notify their counterparts in the regional and local offices. These staff will coordinate with county health departments and animal control agencies as necessary to ensure appropriate follow-up (Appendix H).

V. PREVENTION AND CONTROL

Domestic animals

The primary defense for domestic animals against rabies is vaccination. A number of rabies vaccines are licensed for use in dogs, cats, ferrets, horses, cattle, and sheep. Veterinarians may also consider

administering vaccines off-label to other species. Vaccination of domestic animals additionally provides primary protection for humans against exposure to rabies.

NOTE: Tennessee law requires that dogs and cats over 6 months of age be currently vaccinated against rabies. Required frequency of booster vaccinations depends upon the labeled duration of the vaccine used. State law does not specify whether 1- or 3-year vaccines must be used; however, local jurisdictions may have more stringent rules regarding rabies vaccination. A dog or cat is considered currently vaccinated only if a valid certificate exists and the revaccination date on the certificate has not been reached.

Management of an animal potentially exposed to a rabid animal

- <u>Vaccinated</u>: If a currently vaccinated domestic animal is exposed to a confirmed or suspected rabid animal, it should receive a booster vaccine immediately and be observed by the owner for 45 days. Any sign of illness during this time should be promptly evaluated by a veterinarian. An animal is currently vaccinated if the initial vaccination was administered at least 28 days previously or booster vaccinations have been administered in accordance with the vaccine label.
- <u>Unvaccinated</u>: If an unvaccinated domestic animal is exposed to a confirmed or suspected rabid animal, it should be euthanized immediately. Alternatively a dog, cat, or ferret may be strictly isolated for 6 months such that it has no direct contact with humans or other animals (Appendix D). Other domestic species may be confined and observed for 6 months on a case-by-case basis as determined by public health officials. Rabies vaccine should be administered upon entry into confinement or at least 28 days prior to release. Any illness during the confinement period should be evaluated by a veterinarian and reported to public health.
- Overdue for booster: Animals overdue for a booster vaccination should be evaluated by public health officials on a case-by-case basis with consideration of the severity of exposure, vaccination history, and local rabies epidemiology.

Wild animals

The only licensed wildlife vaccine in the United States is Raboral V-RG, which is approved for oral vaccination of raccoons and coyotes. Each year tens of thousands of vaccine baits are distributed in strategic zones along the western edge of the range of the raccoon rabies variant to prevent spread of the variant. Parts of these bait zones are in northeastern and southeastern Tennessee. The vaccine has been proven safe in multiple animal species, but the vaccinia vector can very rarely cause vacciniosis in susceptible humans. Therefore, persons should not handle baits if found. Questions about vaccine baits can be directed to the USDA (Appendix B).

No injectable vaccines are licensed for use in wild animals; however, wild animals kept in exhibits or zoos may be vaccinated off-label by a licensed veterinarian. Wild-caught mammals may be incubating rabies and should be quarantined for at least 6 months after capture. A captive wild mammal that is exposed to a confirmed or suspected rabid animal should be euthanized immediately. For very valuable animals, public health officials can help develop alternative post-exposure management strategies.

Wild animals should not be translocated to other areas. Rabies and numerous other serious diseases can be introduced into new populations and create a substantial risk to domestic animal, wildlife, and human health.

Humans

Avoidance of wild or unfamiliar animals and vaccination of pets are the best means of protection for humans against exposure to rabies. The public should be educated not to attempt to touch or feed wild or unfamiliar domestic animals and to contact animal control or wildlife officials when necessary for an animal that appears sick, injured, or otherwise in distress (Appendix L).

Management of an animal that bites a human

- Dogs, cats, ferrets: If a person is bitten by a healthy, vaccinated or unvaccinated, domestic dog, cat, or ferret, the animal should be confined and observed for 10 days from the time of the bite (Appendix D). Observation may take place at the home, an animal control facility, or a veterinary clinic. Local jurisdictions often have rules requiring confinement at an animal control facility or veterinary clinic. The 10-day observation period is based on studies showing that dogs, cats, and ferrets do not shed rabies virus in their saliva for more than a few days before showing clinical signs of rabies. Therefore, if an animal appears healthy at the time of the bite and remains healthy for a period of 10 days, rabies transmission at the time of the bite was not possible, regardless of the vaccination status of the animal. If the animal appears sick at the time of the bite or at any point during the subsequent 10 days, it should be evaluated by a veterinarian. If rabies is considered a possibility, the animal should be euthanized and tested. Public health officials and the bite victim's healthcare provider should be consulted about the need to begin PEP immediately or to wait for test results.
- Other domestic animals: For potential exposures involving other domestic animal species such as livestock, public health officials should be consulted. No observation period has been established for animals other than dogs, cats, and ferrets. The animal's health and vaccination status, the circumstances of the bite, and the epidemiology of rabies in the area will be considered in determining a course of action.
- <u>Wild carnivores</u>: For exposures involving wild carnivore species, the animal should be considered rabid and the exposed person should begin PEP as soon as possible, in consultation with public health. If the animal is available it should be tested for rabies, and, if testing is negative, PEP can be discontinued.
- <u>Bats</u>: No more than 1 percent of bats in the wild are thought to be rabid. A bat that is seen in daytime, behaves erratically, or lands on a person is more likely to be rabid. The public should be educated to leave bats alone. However, if a person has direct contact with a bat, the bat should be captured if possible and considered for rabies testing (Appendix G). If a person has uncontrolled direct contact with a bat (i.e. the person cannot say with certainty that there was no possible contact with the mouth of the bat), and the bat is unavailable for testing, PEP should be initiated. The absence of a visible injury does not rule out the need for PEP. In most cases

when a bat is seen in a house but no human contact is reported, there is no need for rabies testing or for PEP. In cases where a bat is found in the room with a sleeping or incapacitated person or a young child and a bite cannot be definitively ruled out, the bat should be tested if it is available. If it is not available for testing, the potentially exposed person should consult his or her healthcare provider and the local health department regarding the need for PEP.

- Other wildlife: For human exposures involving non-reservoir wildlife species, public health officials should be consulted. If the animal is available it may be tested for rabies; if not, PEP may be recommended based on local rabies epidemiology and the circumstances of the bite. Some species such as small rodents (e.g. rats, mice, squirrels, chipmunks) and lagomorphs (e.g. rabbits, hares) have never been known to transmit rabies to a human, and in most cases rabies testing is not necessary.
- <u>Hybrids</u>: The offspring of wild animals crossbred to domestic dogs and cats are considered wild animals. As such, no observation period is defined for management after a bite, and no vaccines are licensed for use in these animals. The state of Tennessee defines a hybrid as an animal with documented genetic heritage of at least 25 percent wild animal. All other animals that are claimed by owners to be "hybrids" should be considered domestic species.

Vaccination of humans

• Pre-exposure prophylaxis (Pre-EP): Pre-EP is the use of rabies vaccine to induce immunity in persons prior to any known rabies exposure. Pre-EP consists of 3 doses of vaccine, given on days 0, 7, and either 21 or 28, and is recommended for certain groups at higher than usual risk of exposure to rabies (e.g. veterinarians and their staff, animal diagnostic laboratory workers, wildlife workers, animal control officers, cavers). Pre-EP simplifies the post-exposure regimen and may protect against unrecognized exposures. Serologic titers are recommended every 6 months or 2 years for groups at continual or frequent risk, respectively. A booster vaccine is recommended if the titer is less than complete neutralization at a 1:5 serum dilution by the rapid fluorescent focus inhibition test (RFFIT). See Appendix E for more information on serologic testing and recommendations.

Pre-EP is also recommended for certain travelers to rabies-endemic regions where animal exposures are likely and appropriate PEP may be unavailable. Issues that should be considered are rabies epidemiology in the region, length of stay, intended activities, and local availability of modern anti-rabies biologics.

Post-exposure prophylaxis: PEP is given after an exposure to prevent disease. Rabies PEP for persons who have not previously been vaccinated against rabies consists of a single dose of human rabies immune globulin (HRIG) on day 0 along with a course of 4 doses of rabies vaccine on days 0, 3, 7, and 14. A 5th dose on day 28 should be added for immunosuppressed individuals. Although PEP should be initiated as soon as possible after a high-risk exposure, it is not a medical emergency. The more immediate concern is management of wounds. Proper wound care is essential and can substantially decrease the risk of rabies transmission. A wound should be washed thoroughly with soap and water and, if possible, irrigated with a virucidal solution

such as povidone-iodine. Suturing ideally should be avoided. HRIG should be infused around the wound as much as is anatomically feasible and any remaining dose injected intramuscularly at a site distant from that of the initial vaccine dose. Because HRIG might partially suppress active production of antibody, no more than the recommended dose should be given. If HRIG is not available at the time of initiation of PEP, it may be given up to 7 days after the first dose of vaccine. Vaccine should be administered in the upper arm (deltoid muscle) in adults; the thigh muscle may be used in children. Rabies vaccine should not be injected into the gluteal muscles. Minor deviations from the recommended vaccination schedule are not important, but major deviations should be discussed with public health officials.

PEP for persons previously vaccinated with a modern cell-culture rabies vaccine, regardless of time since vaccination or current antibody titer, consists of wound care as described above and 2 doses of vaccine given on days 0 and 3. HRIG should not be administered.

Although PEP should if possible be initiated within a few days of a high-risk exposure, it is recommended at any time, regardless of the delay, as long as clinical signs of rabies have not developed. Once the rabies virus enters the CNS it is protected from the immune system, and PEP will not be effective. However, given the long and highly variable incubation period, it is impossible to assign a time limit for effective PEP. It is known that exposures to highly innervated areas such as the face and hands are associated with shorter incubation periods. In such cases it is especially important to begin PEP quickly.

See Appendix F for more information on anti-rabies biologics and where to obtain them.

	Post-exposure prophylaxis for non-immunized individuals
Wound cleansing	Begin with immediate thorough cleansing of all wounds with soap and water. If available, a virucidal agent such as povidone-iodine solution should be used to irrigate the wounds.
HRIG	If possible, the full dose should be infiltrated around wounds. Any remaining volume should be administered IM at an anatomical site distant from vaccine administration.
Vaccine	Human diploid cell vaccine or purified chick embryo cell vaccine—1.0 mL, IM (deltoid), one each on days 0, 3, 7, and 14.
	Post-exposure prophylaxis for previously immunized individuals
Wound cleansing	Begin with immediate thorough cleansing of all wounds with soap and water. If available, a virucidal agent such as povidone-iodine solution should be used to irrigate the wounds.
HRIG	HRIG should not be administered.
Vaccine	Human diploid cell vaccine or purified chick embryo cell vaccine -1.0 mL, IM (deltoid), one each on days 0 and 3.

VI. LABORATORY TESTING

The rabies test

The TDH Division of Laboratory Services offers rabies testing services free of charge within Tennessee and tests more than 1,500 animals per year using the direct fluorescent antibody (DFA) test. Testing is performed at the state public health laboratory facilities in Jackson, Nashville, and Knoxville. City and county animal control agencies as well as veterinarians may submit specimens for rabies testing. The test is highly sensitive and specific and requires about 3 hours to perform.

Specimens for rabies testing

Acceptance policy

Testing resources are intended for use in situations where the testing outcome will influence public health-related decisions. Only mammals that have potentially exposed a person or domestic animal to rabies should be submitted for rabies diagnostics (see Section IV—Exposure).

Collection, packaging, and identification

Brain tissue is examined for the presence of rabies virus in animals. Therefore, animals should be euthanized in a manner that will not damage the brain and brain stem. For most animals, only the head should be submitted for rabies testing. The state public health laboratories do not have facilities to dispose of whole carcasses. For large animals such as cattle and horses, submit only the brain. Consult a veterinarian for brain removal. When submitting bats, ship the entire euthanized animal.

Follow these steps when preparing a specimen for shipment:

- 1. Retrieve the animal's head, within 24 hours of death, by severing the head at the midpoint between the base of the skull and shoulders.
- 2. Keep the specimen refrigerated but not frozen. Do not formalin fix.
- 3. Double bag the specimen using zip lock or heavy plastic bags, and seal each bag. If sharp edges (bone fragments) are evident, wrap the specimen in newspaper to prevent puncture of the plastic bags. Place the bagged specimen in an insulated box with enough ice packs to keep it cool. Stabilize the specimen with newspaper or absorbent paper to prevent movement or damage during transport. (Appendix I)
- 4. If only submitting brain tissue, place the tissue in a hard-sided container to prevent damage during transport, and double-bag the container.
- 5. Treat any specimen infested with fleas, ticks, maggots, ants, or other pests with parasiticide prior to packing.
- 6. If submitting multiple specimens, make sure each specimen is double bagged separately to prevent cross-contamination. Each specimen must have a separate Rabies Submission Form. Each specimen must be clearly identified with a specimen identification number or case number that matches the number on the test request form.
- 7. Tape the completed submission form (Appendix J) to the shipping container.

Shipment

It is important to submit the animal within 48 hours of the time of death for accurate test results, as brain tissue may rapidly deteriorate. Avoid shipping specimens on weekends or holidays unless prior approval has been obtained from a state or regional epidemiologist or the rabies laboratory manager. Refrigerate the specimen while awaiting shipment.

Follow the shipping guidelines of your current carrier or shipping method. Shipping of specimens should be coordinated with the county health department or animal control officer. Ship the specimen by the fastest means possible to the Division of Laboratory Services in Jackson, Knoxville, or Nashville (addresses provided below). Transport by the submitter's personal courier is preferred, but shipment by commercial couriers is acceptable, if permitted. It is against US postal regulations to send this type of specimen through the mail.

- Specimens arriving during weekends or holidays will be tested the next business day.
- All specimens must be submitted within 48 hours of death. Specimens must arrive at the lab by 12:00 PM to ensure same day testing. Specimens received after 12:00 PM will be tested the following business day.
- Complete the requisition form with as much information as possible to ensure that patients and submitters can be easily contacted. Required information is denoted on the form with an asterisk.

Unsatisfactory specimens

A specimen will be reported as unsatisfactory if any of the following conditions are present:

- The specimen is received without an accompanying submission form.
- The brain material is damaged or deteriorated to the extent that anatomical features of the brain are not distinguishable.
- There is no brain tissue evident in the head submitted.
- The specimen is fixed in formalin.

NOTE: Frozen specimens are not necessarily unsatisfactory. Freezing and thawing is very damaging to brain tissue; therefore, acceptance of a frozen specimen will be decided once the specimen is thawed. Submitting a frozen specimen will result in at least a 1-day delay for rabies testing.

Reporting procedure and interpretation

Positive, indeterminate, and unsatisfactory rabies test results are reported immediately by telephone to the GEH office in Nashville. Specimens with indeterminate results are referred to the Centers for Disease Control and Prevention (CDC) for examination and result clarification by additional testing methods. Negative reports are mailed to the specimen provider, GEH, and Epidemiology (Appendix H).

Laboratory locations and contact information

TDH Laboratory ServicesKnoxville Regional LaboratoryJackson Regional Laboratory630 Hart Lane2101 Medical Center Way295 Summar DriveNashville, TN 37243Knoxville, TN 37920Jackson, TN 38301Phone: (615) 262-6300Phone: (865) 549-5201Phone: (731) 426-0686Fax: (615) 262-6393Fax: (865) 549-5199Fax: (731) 421-5199

Definitions

- 1. **Confinement**: Restriction of an animal to a building, pen, or other escape-proof enclosure to monitor for clinical signs of rabies, typically for a 10-day observation period of a dog, cat, or ferret that has bitten a human or other animal
- 2. **Confirmed rabies case**: An animal which has tested positive by direct fluorescent antibody (dFA) test on brain tissue
- 3. CNS (central nervous system): Brain and spinal cord
- 4. **Currently vaccinated**: Rabies vaccine was administered to animal at least 28 days prior and boosters given according to vaccine label
- 5. **Euthanasia**: Humane killing of an animal
- 6. **Domestic animal**: Companion animals (e.g. dogs, cats, ferrets) and livestock (e.g. horses, cattle, sheep, goats, pigs)
- 7. **Human rabies immune globulin (HRIG)**: Anti-rabies antibodies that have been concentrated from the plasma of persons who have been immunized against rabies, used to bind rabies virus at the site of inoculation (bite) to prevent virus from entering nerve cells
- 8. **Incubation period**: The time from exposure to a disease (infection) until onset of clinical illness; typically between 3 weeks and 3 months for rabies but ranges from less than 10 days to more than a year
- 9. **Infectious period**: The amount of time that an infected animal or person can transmit the infectious agent to another host
- 10. **Off-label**: The use of a prescription drug or vaccine for a purpose or species other than that for which it is licensed
- 11. **PEP (Rabies post-exposure prophylaxis)**: Anti-rabies biologics given after an exposure to rabies to prevent infection
 - Person not previously vaccinated: HRIG + rabies vaccine on day 0, followed by vaccine on days 3, 7, and 14
 - Person previously vaccinated (with modern cell-culture vaccine): 2 doses of vaccine, given on days 0 and 3; no HRIG given
- 12. **Pre-EP (Rabies pre-exposure prophylaxis)**: Series of 3 doses of vaccine given to persons at higher than usual risk of rabies exposure, due to occupational, recreational, or travel-related risks
- 13. **Provoked attack**: An incident in which an animal bites in defense of itself or its food, territory, or young; any situation in which a person is attempting to touch or handle a wild animal should be considered provoked
- 14. RFFIT (Rapid fluorescent focus inhibition test): Serologic test to measure antibody titer
- 15. **Rabies exposure**: Any bite, scratch, or other contact in which saliva or nervous tissue of a confirmed or suspect rabid animal enters an open wound or contacts mucous membranes (eyes, nose, mouth)
- 16. **Rabies reservoir**: Animal species that maintains circulation of a rabies virus variant within its population
- 17. **Suspect rabid animal**: In the absence of a test result, any animal reasonably believed by public health officials to potentially be rabid based on species, clinical signs, and history
- 18. Unprovoked attack: An incident in which an animal strikes for no apparent reason

Frequently asked questions

Why does my pet need the rabies vaccine?

Domestic animals are at risk for exposure to rabies from wild animals. If a domestic animal becomes rabid, there is a high risk humans being exposed to rabies. To protect public health, Tennessee law requires that dogs and cats more than 6 months of age be currently vaccinated against rabies. If an unvaccinated domestic animal is exposed to rabies, it must either be euthanized or strictly isolated, with no contact with humans or other animals, for 6 months from the time of the exposure.

Is my pet required to get the rabies vaccine every year or every 3 years?

Tennessee law does not specify whether 1-year or 3-year rabies vaccines must be used, although local jurisdictions may have stricter laws. "Currently vaccinated" means that an animal's first vaccine was given at least 28 days previously and booster doses have been given according to the vaccine label. The revaccination date on a vaccine certificate should match the labeled duration of the vaccine used (i.e. if a 3-year vaccine is given, the revaccination date should not be recorded on the certificate as 1 year later, unless it was the animal's first vaccination).

Can a vaccinated animal ever get rabies?

No vaccine is 100% effective, but rabies in vaccinated animals is extremely rare. One study found that only 2 out of 1,104 rabid dogs were currently vaccinated. If rabies is diagnosed in a currently vaccinated animal, it should be reported to the state health department so that a thorough investigation can be conducted.

Can I use rabies antibody titers as a substitute for current vaccination in my pet?

Antibody titers are not accepted in lieu of rabies vaccination in Tennessee. Titers are only one marker of immunity and may not indicate complete protection. Other immunologic factors also play a role in preventing rabies, and as yet we have no way to measure those. If a pet owner and his or her veterinarian feel that vaccination is too risky for an animal due to a history of severe vaccine reactions or underlying illness, they may choose not to vaccinate the animal. However, if the pet is exposed to a rabid animal, it must then either be euthanized or strictly isolated for 6 months. If a healthy unvaccinated pet bites a person, there will only be a 10-day observation period required (the same as for vaccinated animals).

Is the rabies vaccine safe?

Rabies vaccines are made from killed virus, and very stringent requirements in the manufacturing process ensure that no live virus makes it into a vaccine. There is also a recombinant vaccine for cats in which a protein gene from the rabies virus is incorporated into a different, harmless vector virus. That vaccine is technically a live virus, but it is not the rabies virus. In either case, there is no risk of a person or animal contracting rabies from the vaccine.

There are 2 brands of rabies vaccine for humans. Both are made from killed virus and have excellent efficacy and safety records. The most common side effects of the vaccine, among humans and animals alike, are minor pain and swelling at the injection site.

If canine rabies has been eliminated from the United States, can my dog still get rabies?

Although the canine variant of the rabies virus has been eliminated from the United States, dogs can still be infected with rabies from wild animals like skunks. That is why it is important to vaccinate pets and keep them from roaming. The canine rabies variant is still present in much of the world, including Central and South America. The variant could become re-established if a large enough population of unvaccinated dogs is present.

What if a dog or cat bites me?

If a person is bitten by a dog or cat, the animal should be observed for 10 days from the time of the bite. It does not matter whether the animal is vaccinated against rabies or not. If the biting animal is not available for observation, discuss the situation with public health officials from the local or state health department. Rabies is now very rare in dogs and cats due to the effectiveness of vaccination and animal control activities. The chance of any apparently normal, healthy dog or cat transmitting rabies is extremely low, and if a dog or cat remains healthy for 10 days after a bite it could not have transmitted rabies at the time of the bite. If the animal appears ill or abnormal at the time of the bite or during the subsequent 10 days, it should be evaluated by a veterinarian for signs of rabies.

What if a wild animal bites me?

If a person is bitten by a wild carnivore (e.g. raccoon, skunk, fox) or a bat, the animal should be killed and tested for rabies, if possible. Be careful not to destroy the animal's head. Contact your local health department or animal control agency to arrange for testing. Discuss with public health officials at the local or state health department and your physician whether to begin rabies post-exposure prophylaxis immediately or await test results. In many cases rabies testing can be completed within 24 hours.

Can I get rabies in any way other than a bite?

Rabies virus is only present in saliva and nervous tissue (brain and spinal cord) of a rabid animal. It is not present in blood, urine, or other animal products such as skunk spray or bat guano. It may be possible for rabies to be transmitted if saliva or brain tissue of a rabid animal comes in contact with mucous membranes (e.g. eyes, nose, mouth) or an open wound. A scratch from a rabid animal is not considered an exposure to rabies unless the resulting wound becomes contaminated with fresh saliva. There have been a few documented cases of apparent aerosol exposure resulting in rabies in humans; however, these occurred in a laboratory with concentrated virus and in a cave containing millions of bats. The rabies virus is fragile and does not survive outside the host, so there is no risk of being exposed indirectly (e.g. bat in swimming pool, raccoon eating from dog dish).

How long after an exposure can I wait to begin rabies post-exposure prophylaxis (PEP)?

Rabies PEP should be started within a few days after a high-risk exposure (i.e. a bite from a known rabid animal), especially if the bite was to the face, head, or hands. In most animal bite cases, however, there is time to wait for capturing and observing or testing an animal. Rabies PEP is not a medical emergency, and proper wound care should take precedence. Rabies has a long and highly variable incubation period (the time period from initial infection to onset of disease), so PEP may still be effective weeks or even months after a bite.

Where can I go to get the rabies vaccine?

Health departments in Tennessee do not stock rabies biologics for pre- or post-exposure prophylaxis, but the local health department can provide information on where you can go for care. Generally in Tennessee, only hospital emergency departments stock these products. After the initiation of PEP, you may be able to return for follow-up doses of vaccine at an outpatient clinic or ask your primary care provider to order vaccine. If you need pre-exposure vaccination, ask your primary care provider about ordering the vaccine or check with a travel clinic.

What should I do if I find a bat in my home?

If you are reasonably certain that the bat has not come in contact with a person or pet, open the doors and windows and let the bat escape. If the bat bit someone or there was other uncontrolled contact (i.e. you cannot be certain that there was no contact with the bat's mouth), the bat should be safely captured and tested. See Appendix G for tips on safely capturing bats. People usually know when they have been bitten by a bat. However, bats have small teeth which may not leave obvious marks. Seek advice from your physician and the local or state health department if you awaken to find a bat in your bedroom or see a bat in the room with an unattended child.

Should I be concerned about rabies when I travel outside the United States?

Canine rabies is still very common throughout much of the world, especially in Africa and Asia, and tens of thousands of people die from rabies each year in these regions. Before traveling, check the rabies status of your destination. While you are abroad, take care to avoid animals. If your planned activities will bring you into contact with animals in a rabies-endemic area, and modern biologics for post-exposure prophylaxis may not be available within a 3-day window, you should consider pre-exposure vaccination.

What should I do if my dog has fought with a wild animal?

If your dog (or cat) has fought with a wild carnivore (e.g. raccoon, skunk, fox) and is...

1. Currently vaccinated: See your veterinarian for a rabies booster as well as treatment of any injuries. The dog should be observed for 45 days and examined by a veterinarian if it shows any signs of illness.

- 2. Overdue for vaccination: Have the wild animal tested for rabies if it is available. Contact your local health department or animal control agency to arrange testing. There is no need to test the dog. If the wild animal tests positive for rabies or is not available for testing, the situation should be discussed with public health officials at either the local or state health department. Issues that will be considered are how long overdue is the dog for vaccination and how many times it has been vaccinated in the past.
- 3. Never vaccinated: If the wild carnivore tests positive for rabies or is unavailable for testing, the dog should be euthanized or strictly isolated for 6 months. Environmental health specialists from the local health department should be contacted for assistance and follow-up.

If your dog has fought with a wild animal other than a carnivore (e.g. groundhog, wild boar), discuss the situation with a public health official from the local or state health department. The species involved and the local rabies epidemiology will be considered in determining a course of action.

My dog picked up a vaccine bait for raccoons. What should I do?

The vaccine does not contain rabies virus and will not harm domestic animals. You should not try to remove it from the dog's mouth; doing so may cause you to be bitten. If you come into contact with the pink liquid vaccine, wash the exposed area with soap and water and call the United States Department of Agriculture's Wildlife Services office at 1-800-4-USDA-WS (1-800-487-3297) for more information.

I found a stray dog that's wearing a rabies tag. Can I use it to find the dog's owner?

Call the local health department (see Appendix) with the number from the tag. If the tag was issued from that county, they can tell you what veterinary clinic it was issued to. The veterinary clinic's records should be able to determine which dog and owner the tag belongs to. If it was issued by a different county, call the Tennessee Department of Health office of General Environmental Health. They will be able to tell you what county the tag was issued from; you can then call the health department of that county to find out what veterinary clinic the tag was issued to.



Rabies Exposure Flow Chart

For animals exposed or suspected to have been exposed to a rabid animal



Local or state public health authorities should be consulted immediately

Domestic animals—Dogs, cats, ferrets, livestock **CURRENTLY VACCINATED* UNVACCINATED OVERDUE FOR VACCINATIONS** Revaccinate immediately. Dog, cat, or ferret: Euthanize immediately Evaluate on a case-by-case or, if owner unwilling, place in strict isolation Observe for 45 days under basis in consultation with for 6 months. Vaccinate upon entry or not owner's control. health authorities. later than 28 days before release. Any illness in animal during observation period should be Livestock: Slaughter immediately or confine reported immediately to the local and observe, on case-by-case basis, for 6 health department. months. If signs suggestive of rabies develop during *Currently vaccinated is defined as initially vaccinated at isolation period, the animal should be least 28 days previously or booster vaccinations have euthanized and tested. Contact local health been given in accordance with established guidelines. department for details.

Wild animals and hybrids (any offspring of wild animals crossbred to domestic animals)

If exposed to a rabid animal, should be euthanized immediately. If owner unwilling, consult health authorities.

No injectable rabies vaccines are licensed for use in wild animals or hybrids; however, vaccination status may be considered by health authorities in determining disposition of animal.

Human that is bitten by an animal



Wash wound thoroughly with soap and water. Seek medical attention for wound if necessary. THEN consider type and availability of biting animal, in consultation with local or state public health authorities.



Healthy dog, cat, or ferret

Observe for 10 days. If animal remains clinically normal, there is no need for rabies testing or human post-exposure prophylaxis.*

OR



Other healthy domestic animal

Evaluate on a case-by-case basis in consultation with health authorities.

Rabies reservoir species (raccoon, skunk, fox, bat)



Contact local health department to arrange testing of animal for rabies. If animal is not available for testing, bitten person should receive post-exposure prophylaxis.[†]

OR

Other wild animal (non-reservoir species)



Testing or post-exposure prophylaxis rarely indicated—evaluate on a case-by-case basis in consultation with health authorities.

•Any illness in the animal during the confinement period should be evaluated by a veterinarian and reported immediately to the local health department.

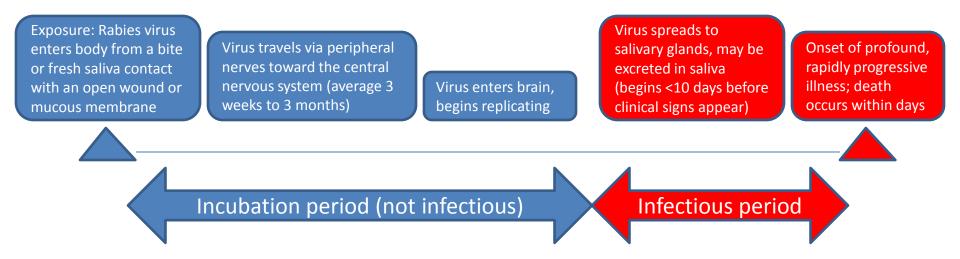
•†See "Human Rabies Prevention—United States, 2008", available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr57e507a1.htm, for additional details and post-exposure prophylaxis protocols for rabies-vaccinated and unvaccinated individuals.

Appendix C of the TN Dept of Health Rabies Control Manual

How long should an animal be confined and observed?*

10 days: If the animal has bitten a person or other domestic animal. Strict confinement is not necessary. If the animal remains healthy for 10 days after a bite, rabies cannot have been transmitted at the time of the bite, regardless of the animal's vaccination status.

6 months: If the animal is unvaccinated and has been bitten by a confirmed or suspected rabid animal, and the owner refuses euthanasia. Strict confinement is necessary. Public health officials should be consulted.



*Observation periods apply ONLY to dogs, cats, and ferrets. Viral shedding periods are not established for any other species.

Serologic testing and booster recommendations

Risk category	Nature of risk	Typical populations	Pre-exposure recommendations
Continuous	Virus present continuously, often in high concentrations, with specific exposures likely to go unrecognized; bite, nonbite, or aerosol exposure possible	Rabies research laboratory workers; rabies biologics production workers	Primary course with serologic testing every 6 months; booster vaccination if antibody titer is below acceptable level*
Frequent	Exposure usually episodic, with source recognized, but also might be unrecognized; bite, nonbite, or aerosol exposure possible	Rabies diagnostic laboratory workers; cavers; veterinarians and staff; animal control and wildlife workers in rabies-enzootic areas; all persons who frequently handle bats	Primary course with serologic testing every 2 years; booster vaccination if antibody titer is below acceptable level*
Infrequent	Exposure nearly always episodic with source recognized; bite or nonbite exposure possible	Veterinarians and animal control staff in areas where rabies is uncommon; veterinary students; travelers to rabies-enzootic areas where access to medical care is limited	Primary course with no serologic testing or booster vaccination
Rare (popula- tion at large)	Exposure always episodic with source recognized; bite or nonbite exposure possible	U.S. population at large, including areas where rabies is epizootic	None

^{*}Minimum acceptable antibody level is complete viral neutralization at a 1:5 serum dilution by the rapid fluorescent focus inhibition test.

Commercial laboratories performing the rapid fluorescent focus inhibition test for rabies virus antibody:

Atlanta Health Associates

309 Pirckle Ferry Road, Suite D300

Cumming, GA 30040

Phone: 770-205-9091 or 800-717-5612

Fax: 770-204-9021 www.atlantahealth.net

Kansas State University

1800 Denison Avenue

Manhattan, KS 66506-5600

Phone: 785-532-4483

www.vet.ksu.edu/depts/dmp/service/rabies/index.htm

Testing at KSU may also be requested through Quest Labs as "Rabies Vaccine Response End-Point Titer".

Anti-rabies biologics approved for use in humans

Biologic	Product name	Manufacturer	Dose	Route
Human diploid cell vaccine	Imovax® Rabies	Sanofi Pasteur	1.0 mL	Intramuscular ^a
Purified chick embryo cell vaccine	RabAvert®	Novartis	1.0 mL	Intramuscular ^a
Rabies immune globulin	Imogam® Rabies-HT	Sanofi Pasteur	20 IU/kg	Local ^b
	HyperRAB® S/D	Talecris	20 IU/kg	Local ^b

^aThe deltoid muscle should be used in adults and adolescents; the quadriceps may be used in young children. Rabies vaccine should never be administered in the gluteal muscles.

Where to obtain anti-rabies biologics

For post-exposure prophylaxis:

Hospital emergency departments are the only facilities that routinely stock human rabies vaccine and immune globulin for post-exposure use in Tennessee. Health departments do not stock or otherwise provide these biologics but can assist in locating a hospital that does. After initiation of the post-exposure prophylaxis series, you may be able to obtain the follow-up doses at an outpatient clinic or arrange with your primary care provider to order and administer the vaccine.

For pre-exposure prophylaxis:

A travel clinic is often the best place to obtain vaccine for pre-exposure prophylaxis. Otherwise, you may be able to arrange with your primary care provider to order and administer the vaccine.

^bAs much product as is anatomically feasible should be infiltrated into and around the wound, with any remaining dose administered intramuscularly in the deltoid or quadriceps, distant from the site of vaccine administration.

What to do if you find a bat in your home

If you are certain no people or pets have come in contact with the bat:

Confine the bat to a room by closing all doors and windows leading out of the room except those to the outside. The bat will probably leave soon. If the bat does not leave, follow the steps to safely capture the bat.

If there may have been contact between the bat and people or pets:

You should have the bat captured and tested. Follow the steps to safely capture the bat and save it for testing. Call animal control or your local health department to arrange for testing.

How to safely capture a bat

- Find a small container, like a box or a large can, and a piece of cardboard large enough to cover the opening in the container. Punch small air holes in the cardboard.
- Put on leather work gloves. When the bat lands, approach it slowly and place the container over it. Slide the cardboard under the container to trap the bat inside.
- If you are certain there has been no contact between the bat and any people or pets, carefully hold the cardboard over the container and take the bat outdoors and release it away from people and pets.
- If there is any question about contact between the bat and people or pets, you should save the
 bat for testing. Tape the cardboard to the container, securing the bat inside, and contact your
 local health department or animal control agency to have the bat tested for rabies.

How to keep bats out of your house

Some bats live in buildings, and there is no reason to evict them if there is little chance for contact with people. However, bats must not be allowed into your home. It is best to contact a wildlife agency for assistance with "bat-proofing" your home. If you choose to do the "bat-proofing" yourself, here are some suggestions:

- Carefully examine your home for openings that might allow bats to enter. Caulk any openings larger than a quarter-inch by a half-inch. Use window screens, chimney caps, and draft-guards beneath attic doors; fill electrical and plumbing holes with stainless steel wool or caulking; and ensure that all doors to the outside close tightly.
- Prevent bats from roosting in attics or buildings by covering outside entry points. Observe where the bats exit at dusk and keep them from coming back by loosely hanging clear plastic sheeting or bird netting over these areas. Bats can crawl out and leave, but cannot re-enter. When all the bats are gone, the openings can be permanently sealed.
- Avoid sealing entries during May through August. If there are young bats present when entries are covered, many of them will die or try to make their way into your living areas.
- Most bats leave in the fall or winter to hibernate, so these are the best times to "bat-proof" your home.

Rabies laboratory result notification procedure

<u>Urgent results</u>: These are positive or unsatisfactory rabies test results, as well as situations in which testing cannot be completed or confirmation is pending further analysis at CDC. Urgent results will be reported by telephone from the state public health laboratory to the General Environmental Health (GEH) central office, Cordell Hull Building (615-741-7206). Outside of normal office hours, unless prior arrangements have been made, laboratory personnel should report these results to the CEDEP on-call epidemiologist (615-741-7247).

GEH will perform the following functions when notified of an urgent lab result:

- GEH central office will notify the local environmental health specialist, the district supervisor, the regional field office manager (or metro county director of environmental health), and the central office public health veterinarians.
- The local environmental health specialist or supervisor will notify the specimen submitter, animal owner, and person bitten.
- Environmental health staff will follow up on all potential animal exposures to rabies.
- Any potential human exposures to rabies will be referred to communicable disease staff at the local health department or regional health office.

Central office public health veterinarians will contact communicable disease staff at the metro/regional health office to verify that appropriate follow-up is completed for all potential human exposures to rabies.

<u>Negative tests</u>: The state public health laboratory will mail a copy of the requisition form with test result to the specimen submitter, GEH, and central office Epidemiology. These copies are mailed the morning after testing is completed (typically 2 business days after receipt of specimen).

ITEMS NEEDED:

2 heavy zip lock bags or trash bags 1 insulated cardboard box 1 envelope Packing tape Newspaper/packing paper Ice packs Rabies Submission Form

<u>STEP 1</u>: Place animal head in a zip lock or heavy plastic bag and make sure it is adequately sealed. **If there are any bone fragments that might puncture the bag, wrap head in several layers of newspaper/absorbent paper.**

<u>STEP 2</u>: Place first bag into a second zip lock or heavy plastic bag and make sure it is adequately sealed. Label the specimen bag with the corresponding submitter number given on the Submission Form (if applicable).

<u>STEP 3</u>: Place labeled specimen in an insulated cardboard box surround by ice packs. Fill any empty space with newspaper to stabilize the specimen and prevent movement during transport.

<u>STEP 4</u>: Make sure the insulated cardboard box is sealed, and place the Rabies Submission Form in an envelope taped to the top of the box with the appropriate address.

TDH Laboratory
Services-Nashville
ATTN: Rabies Lab
630 Hart Lane
Nashville, TN 37243
Phone: (615) 262-6300
Fax: (615) 262-6393

Knoxville Regional Laboratory ATTN: Rabies Lab 2101 Medical Center Way Knoxville, TN 37920 Phone: (865) 549-5201 Fax: (865) 549-5199 Jackson Regional Laboratory ATTN: Rabies Lab 295 Summar Drive Jackson, TN 38301 Phone: (731) 426-0686 Fax: (731) 421-5199



Rabies Specimen Packaging Instructions











Tennessee Department of Health Division of Laboratory Services Rabies Submission

Place State Lab Accession Label Here (TDH use only)

*Indicates required fields										
SPECIMEN COLLECTION INF	FORMATION	l			SUBM	ITTER II	NFORMATION			
*Kind of Animal:			*Submi	tter:			Submitter Num	ber:		
*Date Specimen Collected:				s:						
Specimen Collector Name:			City:				County:			
Phone Number of Collector: () -			State:				Zip Code:			
Animal Collection Site (Address of	or GPS):		Phone I	Number: ()	- .	Fax Number: (-)	-
City:	*County:		E-mail A	Address:						
State:	Zip Code:									
* REASON FOR SUBMISSION	N (Provide o	details belo	ow)	*Public H	EALTI	н Сонт	ACT			
☐ Person Exposed ☐ Other A☐ Surveillance Program	nimal Expose	ed		Has a Public submission			peen contacted r □ No	egard	ing this	
Was the attack provoked? □ Yes	s □ No	Date of I	Death:	//		□ N	Natural Death □	Eutha	nized	
OWNER OF ANIMAL										
Last Name:		First Name:				Middle	Initial:			
Address:						Phone	Number: ()	-	
City:	County:		State:			Zip Cod	de:			
*Person exposed	'es □ No									
Last Name:		First Name:				Middle	Initial:			
□ Male □ Fem	nale	Date of Birth	n:/_							
Address:						Phone	Number: ()		
City:	County:		State:			Zip Cod	de:			
Date of Exposure:	Exposure Ty	ype: □ Bite	□ Saliva	Contact □ Ne	urologi	ical Tissu	ıe □ Scratch			
//	Exposure Si	ite: □ Arm □	□ Foot □	Hand □ Head	□ Le	g □ Nec	k □ Torso			
*OTHER ANIMAL EXPOSED	□ Yes □	No								
Type of Animal Exposed:		Date of	Exposur	e://						
Owner Last Name:		Owner First	Name:			Owner	Middle Initial:			
Address:						Phone	Number: ()	_	
City:	County:		State:			Zip Cod	de:			
ADDITIONAL SPECIMEN INF	FORMATION									
Vaccination History:										
List of Clinical Signs:										
Date of First Clinical Signs:/	/									
Additional Information:									·	
LABORATORY FACILITIES	211==41	Lash du Tri	07040	Billing Inf	orma	ation (TDH use only)		
Nashville Central Laboratory, 630 Knoxville Regional Laboratory, 2 Knoxville, TN 37920 Jackson Regional Laboratory, 29	101 Medical (Center Way,								
38301		,	,							

COUNTY	ADDRESS	PHONE	FAX
Anderson	710 North Main Street Clinton, TN 37716	(865) 425-8800	(865) 457-4252
Bedford	140 Dover Street Shelbyville, TN 37160	(931) 684-3426	(931) 684-5860
Benton	225 Hospital Drive Camden, TN 38320	(731) 584-4944 (731) 584-4539	(731) 584-8831
Bledsoe	1185 Alvin York Highway Pikeville, TN 37367	(423) 447-2149	(423) 447-6777
Blount	301 McGhee Street Maryville, TN 37801	(865) 983-4582 (865) 522-1333	(865) 983-4574
Bradley	201 Dooley Street Southeast Cleveland, TN 37311	(423) 728-7020	(423) 479-6130
Campbell	162 Sharp-Perkins Road Jacksboro, TN 37757	(423) 562-8351	(423) 562-1593
Cannon	301 West Main Street Woodbury, TN 37190	(615) 563-4243 (615) 563-4202	(615) 563-6212
Carroll	633 High Street Huntingdon, TN 38344	(731) 986-1990 (731) 986-1993	(731) 986-1995
Carter	403 East G Street Elizabethton, TN 37643	(423) 543-2521	(423) 543-7348
Cheatham	162 County Services Drive, Suite 200 Ashland City, TN 37015	(615) 792-4318	(615) 792-6794
Chester	301 Quinco Drive Henderson, TN 38340	(731) 989-7108	(731) 989-9686
Claiborne	620 Davis Drive Tazewell, TN 37879	(423) 626-4291	(423) 626-2525
Clay	115 Guffey Street Celina, TN 38551	(931) 243-2651	(931) 243-3132
Cocke	430 College Street Newport, TN 37821	(423) 623-8733	(423) 623-0874
Coffee	Manchester Clinic 800 Park Street Manchester, TN 37355	(931) 723-5134	(931) 723-5148
	Tullahoma Clinic 615 Wilson Avenue Tullahoma, TN 37388	(931) 455-9369	(931) 455-4827
Crockett	209 North Bells Street Alamo, TN 38001	(731) 696-2505 (731) 696-4410	(731) 696-3165 (731) 696-4370
Cumberland	131 South Webb Avenue Crossville, TN 38555	(931) 484-6196	(931) 456-1047
Davidson	311 23 rd Avenue North Nashville, TN 37203	(615)340-5616	(615)340-5665
Decatur	155 North Pleasant Street Decaturville, TN 38329	(731) 852-2461	(731) 852-3794
DeKalb	254 Tiger Drive Smithville, TN 37166	(615) 597-7599	(615) 597-1349
Dickson	Dickson Clinic 301 West End Avenue Dickson, TN 37055-2013	(615) 446-2839	(615) 441-1900
	White Bluff Clinic 200 School Road White Bluff, TN 37187	(615) 797-5056	(615) 797-5051
Dyer	1629 Woodlawn Avenue Dyersburg, TN 38024	(731) 285-7311 (731) 285-7359	(731) 285-2610
Fayette	90 Yum Yum Road Somerville, TN 38068	(901) 465-5243	(901) 465-5245
Fentress	240 Colonial Circle, Suite A Jamestown, TN 38556	(931) 879-9936	(931) 879-9938
Franklin	338 Joyce Lane Winchester, TN 37398	(931) 967-3826	
Gibson	Trenton Clinic 1250 Manufacturer's Row Trenton, TN 38382	(731) 855-7601 (731) 855-7602 (731) 855-7604	(731) 855-7603

OCAL HEALTI	H DEPARTMENTS		
	Milan Clinic	(731) 686-9240	(731) 686-0962
	6501 Telecom Drive		
	Milan, TN 38358		
	Humboldt Clinic	(731) 784-5491	(731) 784-1726
	149 North 12 th Street		
-	Humboldt, TN 38343	(004) 000 ==00	(004) 404 7000
Giles	209 Cedar Lane	(931) 363-5506	(931) 424-7020
Cuniman	Pulaski, TN 38478	(005) 020 5247	(0.05) 020 2504
Grainger	185 Justice Center Drive Rutledge, TN 37861	(865) 828-5247	(865) 828-3594
Greene	810 West Church Street	(423) 798-1749	(423) 798-1755
dicene	Greeneville, TN 37744	(423) 730 1743	(423) 730 1733
Grundy	1372 Main Street	(931) 692-3641	(931) 692-2201
,	Altamont, TN 37301	(931) 692-3418	(,
Hamblen	331 West Main Street	(423) 586-6431	(423) 586-6324
	Morristown, TN 37815	` ,	, ,
Hamilton	921 East Third Street	(423) 209-8000	(423) 209-8001
	Chattanooga, TN 37403	(423) 209-8010	
Hancock	178 Willow Street	(423) 733-2228	(423) 733-2428
	Sneedville, TN 37869	(== .) === === .	(==:) === ====
Hardeman	10825 Old Highway 64	(731) 658-5291	(731) 658-6536
Hardin	Bolivar, TN 38008 1920 Pickwick Street	(731) 658-9538 (731) 925-2557	(731) 925-3100
пагин	Savannah, TN 38372	(731) 925-2557	(731) 925-3100
Hawkins	Rogersville Office	(423) 272-7641	(423) 272-3086
114441113	201 Park Boulevard	(123) 272 7011	(123) 272 3000
	Rogersville, TN 37857		
	Church Hill Office	(423) 357-5341	(423) 357-4523
	247 Silver Lake Road		
	Church Hill, TN 37642		
Haywood	950 East Main Street	(731) 772-0463	(731) 772-3377
	Brownsville, TN 38012	(731) 772-0464	
Henderson	90 Rush Street	(731) 968-8148	(731) 968-4777
Honni	Lexington, TN 38351	(731) 968-6398	/721\644.0711
Henry	803 Joy Street Paris, TN 38242	(731) 642-4025 (731) 642-5169	(731) 644-0711
Hickman	111 Murphree Avenue	(931) 729-3516	(931) 729-5029
mekinan	Centerville, TN 37033	(331) 723 3310	(331) 723 3023
Houston	Town Square	(931) 289-3463	(931) 289-3499
	Erin, TN 37061	,	,
Humphreys	725 Holly Lane	(931) 296-2231	(931) 296-4590
	Waverly, TN 37185		
Jackson	744 School Drive	(931) 268-0218	(931) 268-0872
	Gainesboro, TN 38562		
Jefferson	931 Industrial Park Road, Suite 200	(865) 397-3930	(865) 397-1246
Johnson	Dandridge, TN 37725 715 West Main Street	(423) 727-9731	(423) 727-4153
Johnson	Mountain City, TN 37683	(423) /27-9/31	(423) /2/-4153
Knox	140 Dameron Avenue	(865) 215-5300	(865) 215-5295
KIIOX	Knoxville, TN 37917	(003) 213 3300	(003) 213 3233
Lake	400 Highway 78 South	(731) 253-9954	(731) 253-9956
	Tiptonville, TN 38079	(731) 253-9955	,
Lauderdale	500 Highway 51 South	(731) 635-9711	(731) 635-3630
	Ripley, TN 38063	(731) 635-4661	
Lawrence	2379 Buffalo Road	(931) 762-9406	(931) 766-1592
	Lawrenceburg, TN 38464	(22)	
Lewis	51 Smith Avenue	(931) 796-2204	(931) 796-1625
	Hohenwald, TN 38462		
15	_	(004) 400 0004	
Lincoln	1000 Washington Street West, Suite A	(931) 433-3231	(931) 438-1567
	1000 Washington Street West, Suite A Fayetteville, TN 37334	` '	, ,
Lincoln	1000 Washington Street West, Suite A Fayetteville, TN 37334 600 Rayder Avenue	(931) 433-3231 (865) 458-2514	(931) 438-1567 (865) 458-8587
	1000 Washington Street West, Suite A Fayetteville, TN 37334	` '	, ,

LOCAL HEALTI	H DEPARTMENTS		
Madison	Main Facility 804 North Parkway	(731) 423-3020	(731) 424-9589
	Jackson, TN 38305		
	East Jackson Clinic 589 East College Street	(731) 427-3040	(731) 423-3099
Marion	Jackson, TN 38301 24 East Seventh Street	(423) 942-2238	(423) 942-9186
Marshall	Jasper, TN 37347 206 Legion Street	(931) 359-1551	(931) 359-0542
Maury	Lewisburg, TN 37091 1909 Hampshire Pike	(931) 388-5757	(931) 560-1119
McMinn	Columbia, TN 38401 393 County Road 554	(423) 745-7431	(423) 744-1604
McNairy	Athens, TN 37303 725 East Poplar Avenue	(731) 645-3474	(731) 645-4530
Meigs	Selmer, TN 38375 389 River Road	(423) 334-5185	(423) 334-1713
	Decatur, TN 37322		
Monroe	3469 New Highway 68 Madisonville, TN 37354	(423) 442-3993 (423) 442-5934	(423) 442-9468
Montgomery	330 Pageant Lane Clarksville, TN 37040	(931) 648-5747	(931) 645-9019
Moore	251 Majors Boulevard Lynchburg, TN 37352	(931) 759-4251	(931) 759-6380
Morgan	1111 Knoxville Highway Wartburg, TN 37887	(423) 346-6272	(423) 346-2349
Obion	1008 Mt. Zion Road Union City, TN 38261	(731) 885-8722 (731) 885-8723 (731) 885-8724	(731) 885-4855
Overton	1080 Bradford-Hicks Drive Livingston, TN 38570	(931) 823-6260	(931) 823-5821
Perry	31 Medical Drive Linden, TN 37096	(931) 589-2138	(931) 589-5414
Pickett	1013 Woodlawn Drive Byrdstown, TN 38549	(931) 864-3178	(931) 864-3376
Polk	Benton Center 2279 Parksville Road Benton, TN 37307	(423) 338-4533	(423) 338-1959
	Copper Basin Center 840 Cherokee Trail Copperhill, TN 37317	(423) 496-3275	(423) 496-4442
Putnam	121 South Dixie Avenue Cookeville, TN 38501	(931) 528-2531	(931) 526-7451
Rhea	344 Eagle Lane Evensville, TN 37332	(423) 775-7819	(423) 775-8078
Roane	1362 North Gateway Avenue Rockwood, TN 37854	(865) 354-1220	(865) 354-0112
Robertson	800 South Brown Street Springfield, TN 37172	(615) 384-0208	(615) 384-0245
Rutherford	Main facility 100 West Burton Murfreesboro, TN 37130	(615) 898-7780	(615) 898-7829
	North Rutherford Facility 108 David Collins Drive Smyrna, TN 37167	(615) 355-6175	(615) 459-7996
Scott	344 Court Street Huntsville, TN 37756	(423) 663-2445	(423) 663-9252
Sequatchie	16939 Rankin Avenue North Dunlap, TN 37327	(423) 949-3619	(423) 949-6507
Sevier	227 Cedar Street Sevierville, TN 37864	(865) 637-6853	(865) 429-2689
Shelby	814 Jefferson Avenue Memphis, TN 38105	(901) 544-7600	(901) 544-7475

LOCAL HEALI	H DEPARTMENTS		
Smith	303 High Street North Carthage, TN 37030	(615) 735-0242	(615) 735-8250
Stewart	1021 Spring Street Dover, TN 37058-0497	(931) 232-5329	(931) 232-7247
Sullivan	154 Blountville Bypass Blountville, TN 37617	(423) 279-2777	(423) 279-7534
Sumner	Gallatin Clinic 1005 Union School Road Gallatin, TN 37066	(615) 206-1100	(615) 206-9742
	Hendersonville Clinic 351 New Shackle Island Road Hendersonville, TN 37075	(615) 824-0552	(615) 824-9771
	Portland Clinic 214 West Longview Drive Portland, Tennessee 37148	(615) 325-5237	(615) 325-5549
Tipton	4700 Mueller Brass Road Covington, TN 38019	(901) 476-0235	(901) 476-0229
Trousdale	541 East Main Street Hartsville, TN 37074	(615) 374-2112	(615) 374-1119
Unicoi	101 Okolona Drive Erwin, TN 37650-2167	(423) 743-9103	(423) 743-9105
Union	4335 Maynardville Highway Maynardville, TN 37807	(865) 992-3867	(865) 992-7238
Van Buren	907 Old McMinville Street Spencer, TN 38585	(931) 946-2643 (931) 946-2438	(931) 946-7106
Warren	1401 Sparta Street McMinnville, TN 37110	(931) 473-8468	(931) 473-0595
Washington	219 Princeton Road Johnson City, TN 37601	(423) 975-2200	(423) 975-2210
Wayne	102 JV Mangubat Drive Waynesboro, TN 38485	(931) 722-3292	(931) 722-7249
Weakley	9852 Highway 22 Dresden, TN 38225	(731) 364-2210 (731) 364-2258	(731) 364-5846
White	135 Walker Street Sparta, TN 38583-1725	(931) 836-2201	(931) 836-3580
Williamson	Franklin Clinic 1324 West Main Street Franklin, TN 37064	(615) 794-1542	(615) 790-5967
	Fairview Clinic 2629 Fairview Boulevard Fairview, TN 37062	(615) 799-2389	(615) 799-2260
Wilson	927 East Baddour Parkway Lebanon, TN 37087	(615) 444-5325	(615) 444-2750

REGIONAL HEALTH OFFICES

REGION	ADDRESS	PHONE	FAX
East	2101 Medical Center Way Knoxville, TN 37920	(865) 546-9221	(865) 594-5738
Mid-Cumberland	710 Hart Lane Nashville, TN 37247	(615) 650-7000	(615) 262-6139
Northeast	1233 Southwest Avenue Johnson City, TN 37604	(423) 979-3200	(423) 979-3297
South Central	1216 Trotwood Avenue Columbia, TN 38401	(931) 380-2532	(931) 380-3364
Southeast	State Office Building 540 McCallie Avenue, Suite 450 Chattanooga, TN 37402	(423) 634-3124	(423) 634-3139
Upper Cumberland	1100 England Drive Cookeville, TN 38501	(931) 528-7531	(931) 520-0413
West	295 Summar Street Jackson, TN 38301	(731) 423-6600	(731) 935-7093

COUNTY	ADDRESS	PHONE
Anderson	Oak Ridge Animal Shelter	(865) 425-3423
	395 Belgrade Road	
	Oak Ridge, TN 37830	
	Clinton Animal Control	(865) 457-3112
	125 West Broad Street	
Bedford	Clinton, TN 37716	(024) 685 4420
вешоги	Bedford County Animal Control 205 Lane Parkway	(931) 685-1130
	Shelbyville, TN 37160	
Benton	Benton County Animal Shelter	(731) 584-3152
200	915 Divider Natchez Trace	(101) 00 10101
	Camden, TN 38320	
Blount	Blount County Animal Shelter	(865) 980-6244
	233 Currie Street	
	Maryville, TN 37804	
Bradley	Cleveland Animal Shelter	(423) 479-2122
	360 Hill Street Southeast	
	Cleveland, TN 37311	
Campbell	Campbell County Animal Control	(423) 566-1892
	749 Towe String Road	
	Jacksboro, TN 37757	(422) 562 4747
	Lafollette Animal Control 207 South Tennessee Avenue	(423) 563-4747
	Lafollette, TN 37766	
Carter	Elizabethton-Carter County Animal Control	(423) 547-6359
Curter	253 Sycamore Shoals Drive	(423) 347 0333
	Elizabethton, TN 37643	
Cheatham	Cheatham County Animal Control	(615) 792-3647
	2797 Sams Creek Road	
	Pegram, TN 37143	
Chester	City Of Henderson Animal Control	(731)983-5000
	121 Crook Avenue	
Calla	Henderson, TN 38340	(422) (22 4040
Cocke	Newport Animal Shelter	(423) 623-1010
	420 Humane Way	
Coffee	Newport, TN 37821 Coffee County Animal Control	(931) 723-2730
Conce	156 Freedom Drive	(331) 723 2730
	Manchester, TN 37355	
	Manchester Animal Control	(931) 723-7211
	1210 Oakdale Street	, ,
	Manchester, TN 37355	
	Tullahoma Animal Control	(931) 454-9580
	942 Maplewood Avenue	(931) 454-1768
	Tullahoma, TN 37388	
Crockett	Crockett County Rabies Control Office	(731) 696-4698
	1895 Nance Road	
Cumberland	Alamo, TN 38001	(931) 484-8525
Cumperiand	Cumberland County Animal Shelter 782 East Lane Road	(931) 484-8325
	Crossville, TN 38555	
Davidson	Metro Animal Care and Control	(615) 862-7928
	5125 Harding Place	(==5, 552 / 520
	Nashville, TN 37211	
Dickson	Animal Control of Dickson	(615) 441-4651
	100 Virgil Bellar Road	

Fayette	Fayette County Sheriff's Department-Animal Control 705 Justice Drive	(901) 465-3456
	Somerville, TN 38068 Fayette County Animal Rescue 595 Clement Drive Rossville, TN 38066	(901) 854-2565
Franklin	Franklin County Animal Control 332 Utility Road Winchester, TN 37398	(931) 967-5389
Gibson	Trenton Animal Control 1250 Manufacture Road Trenton, TN 38382	(901) 855-7601
Greene	Greene County Animal Control 990 Hal Henard Road Greeneville, TN 37743	(423) 798-1777
Hamblen	Morristown Hamblen Humane Society 300 Dice Street Morristown, TN 37813	(423) 581-1494
Hamilton	Mckamey Animal Care/Adoption Center 4500 North Access Road Chattanooga, TN 37415	(423) 653-6430
	Humane Educational Society Of Chattanooga 212 North Highland Park Avenue Chattanooga, TN 37404	(423) 624-5302
	City Of East Ridge Animal Services 1015 Yale Street East Ridge, TN 37412	(423) 664-0271
Hardeman	Hardeman County Dept Of Solid Waste & Animal Control 300 East Jackson Street Bolivar, TN 38008-0686	(731) 658-2884
Hardin	Savannah Animal Services 3175 Highway 226 Savannah, TN 38372	(731) 925-3303
Hawkins	Hawkins County Humane Society 5180 Highway 11W Rogersville, TN 37857	(423) 272-6538
Haywood	Brownsville-Haywood County Animal Shelter 217 South Russell Street Brownsville, TN 38012	(731) 772-2908 (731) 772-1212
Henry	City of Paris Animal Shelter 455 Recycling Drive Paris, TN 38242	(731) 642-5024 Emergency: (731) 642-2424
Hickman	Town of Centerville Animal Control 102 East Swan Centerville, TN 37033	(931) 729-5146
Humphreys	Waverly Animal Shelter 108 Young Road Waverly, TN 37185	(931) 296-7319
Jackson	Jackson-Madison County Rabies Control 146 Miller Avenue Jackson, TN 38301	(731) 668-4211
Jefferson	Humane Society of Jefferson County 310 Landfill Road Jefferson City, TN 37760	(865) 475-8930
Johnson	Johnson County Humane Society 919 Pine Orchard Road Butler, TN 37640	(423) 768-0896
	Town of Mountain City Animal Control Division	(423) 727-7880

	901 Tobacco Road	
	Mountain City, TN 37683	
Knox	Young-Williams Animal Center	(865) 215-6599
	3201 Division Street	,
	Knoxville, TN 37919	
Lauderdale	Lauderdale County Rabies Control	(731) 836-7387
	3265 Curve Nankipoo Road	
	Ripley, TN 38063	
Lincoln	Fayetteville/Lincoln County Animal Shelter	(931) 433-3726
	1718 Pulaski Highway (Highway 64 West)	
	Fayetteville, TN 37334	(0.05) 450 5500
Loudon	Loudon County Animal Shelter 250 Jamie Drive	(865) 458-5593
	Loudon, TN 37774	
Macon	Lafayette Animal Control	(615) 666-4725
Widcom	Greenwood Road	(013) 000 4723
	Lafayette, TN 37083	
Madison	Jackson-Madison County Rabies Control	(731) 668-4211
	146 Miller Avenue	, ,
	Jackson, TN 38301	
Marshall	Marshall County Animal Control	(931) 359-5948
	300 Woodside Avenue	
	Lewisburg, TN 37091	(004) 0== 4400
Maury	Maury County-City of Columbia Animal Services	(931) 375-1402
	1233 Maple Ash Avenue	
McMinn	Columbia, TN 38401 City Of Athens Animal Shelter	(423) 744-2747
IVICIVIIIII	219 Alford Street	(423) 744-2747
	Athens, TN 37303	
Monroe	Monroe County Animal Shelter	(423) 442-1015
	170 Kefauver Lane	,
	Madisonville, TN 37354	
Montgomery	Animal Control and Adoption Services	(931) 648-5750
	616 North Spring Street	
	Clarksville, TN 37040	(004) 705 0547
Putnam	Cookeville/Putnam County Animal Shelter 2105 West Jackson Street	(931) 526-3647
	Cookeville, TN 38501	
Rhea	Rhea County Animal Shelter	(423) 775-2029
Micu	9118 Back Valley Road	(423) 773 2023
	Evensville, TN 37332	
	City of Dayton Animal Shelter	(423)775-8410
	115 Blythes Ferry Road	(423)775-8403
	Dayton, TN 37321	
Roane	Roane County Animal Shelter	(865) 354-7387
	296 Manufacturers Road	
Dahautaan	Rockwood, TN 37854	/C1E) 204 EC11
Robertson	Robertson County Animal Control	(615) 384-5611
	2900 West County Farm Road Springfield, TN 37172	
	City of Springfield Animal Shelter	(615) 384-9289
	507 Industrial Drive	(==5, 55 . 5205
	Springfield, TN 37172	
	Greenbrier Animal Control	(615) 643-1003
	1220 Sugar Camp Drive	
	Greenbrier, TN 37073	
Rutherford	Pet Adoption and Welfare Services	(615) 898-7740
	285 John R Rice Boulevard	

-	Murfreesboro, TN 37129	
Sevier	Sevier County Humane Society 959 Gnatty Branch Road Pigeon Forge, TN 37868	(865) 453-7000
Shelby	Memphis Animal Services 2350 Appling City Cove Memphis, TN 38133	(901) 636-1416
	City Of Bartlett Animal Shelter 5220 Shelter Run Lane Bartlett, TN 38135	(901) 385-6484
	City of Germantown Animal Shelter 7700 Southern Avenue Germantown, TN 38138	(901) 757-7358
Sullivan	Sullivan County Animal Shelter 380 Massengill Road Blountville, TN 37617	(423) 279-2741
	S.B.K. Animal Center Kingsport 2141 Idle Hour Road Kingsport, TN 37660	(423) 247-1671
Sumner	Sumner County Sheriff's Division of Animal Control 1033 Union School Road Gallatin, TN 37066	(615) 452-2400
	City of Hendersonville Animal Control 101 Maple Drive North Hendersonville, TN 37075	(615) 264-5355
	City of Portland Animal Control 122 Morningside Drive Portland, TN 37148	(615) 325-5330
Tipton	Tipton County Animal Shelter 8279 Highway 51 Brighton, TN 38011	(901) 837-5919
Unicoi	Unicoi County Humane Society 185 North Industrial Drive Erwin, TN 37650	(423) 743-3071
Union	Union County Humane Society 719 Hickory Star Road Maynardville, Tennessee 37807	(865) 992-7969
Warren	Warren County Animal Control 169 Paws Trail McMinnville, TN 37110	(931) 507-3647
Washington	Washington County-Johnson City Animal Shelter 525 Sells Avenue Johnson City, TN 37604	(423) 926-8769
White	White County Animal Control Shelter 5600 Gum Springs Mountain Road Sparta, TN 38583	(931) 510-3604 (931) 761-3647
Williamson	Williamson County Animal Control and Adoption Center 106 Claude Yates Drive Franklin, TN 37064	(615) 790-5590
Wilson	Wilson County Animal Control 378 Dump Road Lebanon, TN 37088 Mt. Juliot Animal Shelter/Control	(615) 444-9775 Emergency: (615) 489-3383
	Mt. Juliet Animal Shelter/Control 115 Industrial Drive Mount Juliet, TN 37122	(615) 773-5533
	City of Lebanon Animal Control 320 Tennessee Boulevard Lebanon, TN 37087	(615) 444-0825